wherein the matrix has a capacity to adsorb to a target nucleic acid at a first pH, and to release the target nucleic acid at a desorption pH which is higher than the first pH, and wherein the cap further comprises an aromatic hydrocarbon ring.

104. (New Claim) The matrix of claim 103, wherein at least one member of the aromatic hydrocarbon ring is the amine with a pK of less than about 9.

105. (New Claim) The matrix of claim 103, wherein the aromatic hydrocarbon ring is selected from the group consisting of pyridine, and imidazole.

106. (New Claim) A pH dependent ion exchange matrix, comprising:

a solid support, and

a plurality of ion exchange ligands, each first ion exchange ligand comprising:

a cap comprising an amine with a pK of less than about 9;

a spacer covalently attached to the cap, the spacer comprising a spacer alkyl chain with an amine terminus and an acidic moiety covalently attached to the spacer alkyl chain; and

a linker comprising a linker alkyl chain covalently attached to the solid support at a first end of the linker alkyl chain and covalently attached to the amine terminus of the spacer at a second end of the linker alkyl chain;

wherein the matrix has a capacity to adsorb to a target nucleic acid at a first pH, and to release the target nucleic acid at a desorption pH which is higher than the first pH, and wherein the aromatic hydrocarbon covalently liked to the spacer defines a basic amino acid moiety selected from the group consisting of histidine and histamine.

107. (New Claim) A method of making a pH dependent ion exchange matrix, comprising:

(a) providing a solid support;

(b) providing a first ion exchange ligand comprising:

a cap comprising an amine with a pK of less than 9, wherein the amine is selected from the group consisting of a primary, a secondary, or a tertiary amine;

a spacer covalently attached to the cap, the spacer comprising a spacer alkyl chain and with an amine terminus, an acidic substituent which is covalently attached to the spacer alkyl chain; and

a linker comprising a linker alkyl chain having a first end and a second end, wherein the second end is covalently attached to the amine terminus of the spacer; and

(c) combining the solid phase and the first ion exchange ligand under conditions where a covalent bond is formed between solid phase and the first end of the linker alkyl chain,

wherein the cap further comprises an aromatic hydrocarbon ring having at least five members.

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